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Ordinance of the Ministry of Home Affairs No. 3 of 1965

Ministerial order to provide technical standards for metal evacuation ladder

In accordance with the provision of Article 21-2(2) of the Fire Service Act (Act No. 186 of 1948), the ministerial order to revise all the order to provide technical standards for metal evacuation ladder shall consist of the following parts.

Purport

Article 1 This ministerial order covers the technical specifications applicable to metal evacuation ladder (hereinafter referred to as “the evacuation ladder”).

Definitions

Article 2 In this ministerial order, the meanings of the terms listed in the following items shall be as prescribed in the respective items.

(i) Evacuation ladder

Evacuation ladder refers to fixed ladder, propped up ladder, and hanging ladder.

(ii) Fixed ladder

Fixed ladder refers to a ladder that is fixed to the target fire prevention structure in usable condition at all times (including the stow-away type, where ladders are stowed away within vertical bars, which can be put into use as the ladders are being pulled out, hereinafter the same) and the type where its lower parts can be folded up or expanded and contracted.

(iii) Propped up ladder

Propped up ladder refers to a ladder that is used by making it lean against the target fire prevention structure.

(iv) Hanging ladder

Hanging ladder refers to a ladder that is used by making it hang from the target fire prevention structure.

(v) Hanging ladder for hatches

Of hanging ladders, hanging ladder for hatches refers to a ladder that is stowed (limited to ladders whose projected parts do not touch the target fire prevention structure when in use) in the evacuation equipment hatch (this refers to a hatch-type fixture that is able to stow a metal evacuation ladder under the usable condition at all times).

Structure

Article 3 The evacuation ladder must have a structure that is able to be used safely, securely, and easily.

(2) The evacuation ladder shall consist of vertical bars (for hanging ladders, the equivalent of vertical bars, such as wire ropes, chains, and other types of metal bars and plates; hereinafter the same) and ladders.

- (3) Of evacuation ladders, ones with a single vertical bar shall meet the requirements in each of the following items:
 - (i) The rung shall be installed to the vertical bar at the central axis of the ladder, and the tips of the rung shall have anti-sideslip projections that are more than 5 centimeters long, parallel to the axis of the vertical bar.
 - (ii) The inner measurement length of ladders from the vertical bar to the rung tip shall be more than 15 centimeters and less than 25 centimeters; the width of the vertical bar shall be less than 10 centimeters along the axis direction of the rungs.
- (4) Of evacuation ladders, the inner measurement interval between vertical bars for ones with more than two vertical bars shall be more than 30 centimeters and less than 50 centimeters.
- (5) The rungs of the evacuation ladder shall have a circle-shaped cross section of more than 14 millimeters in diameter and less than 35 millimeters in diameter, or the equivalent grip thickness of other shapes.
- (6) The rungs of the evacuation ladder shall be attached to the vertical bar in the equal interval, and the interval shall be more than 25 centimeters and less than 35 centimeters.
- (7) The step surface of the rungs in the evacuation ladder shall have anti-slip features.

Article 4 In addition to the stipulations in the previous article, the stow-type of fixed ladders or the ladders with a structure where their lower parts can be folded up or expanded and contracted, shall meet the requirements in each of the following items:

- (i) The ladder shall have a protective device to prevent the clasp from easily coming off due to vibration and other impacts.
- (ii) The ladder shall become ready to use with two or less steps, except for the steps written prior to the protective device as stipulated in the previous item.

Article 5 In addition to the stipulations in Article 3, the propped up ladder shall meet the requirements in each of the following items:

- (i) A safety device to prevent slipping and fall shall be installed at the upper support point (a random location within 60 centimeters from the top).
- (ii) The lower support point shall have anti-slip features.
- (iii) With regards to the ladder with expandable and contractible structure, an automatic contraction prevention device that deploys when in use shall be built in.
- (iv) With regards to the ladder with foldable structure, an automatic folding prevention device that deploys when in use shall be built in.

Article 6 In addition to the stipulations in Article 3, the hanging ladder shall meet the requirements in each of the following items:

- (i) The ladder shall have effective projections to keep the ladder in use from the target structure of fire prevention by more than 10 centimeters of distance at each rung location. However, this stipulation does not apply to the products that are able to keep the ladder in use from the target structure of fire prevention by more than 10 centimeters of distance without projections.
- (ii) The tip of the vertical bar shall be attached with a round jumpring, hook, and other hanging metal fittings.

(iii) Hanging metal fittings shall have the structure where the fittings do not come off easily.

Materials

Article 7 The materials used in the evacuation ladder, that are listed in each of the items in the upper columns in the chart below shall have the same or above strength and durability to the products listed in the lower columns, and for the evacuation ladder that is made of materials without anti-corrosion feature, additional anti-corrosion treatment shall be applied.

(i) Materials used in fixed ladder and propped up ladder

Part name	Material
Vertical bar Rung Reinforcement material Support material	JIS (refers to the Japanese industrial standards, as stipulated in Item 1, Article 17 of the Industrial Standardization Act, Law No. 185 of 1949, hereinafter the same) JIS G 3101 Rolled steel for general structure JIS G 3444 Carbon steel tubes for general structure JIS H 4100 Aluminium and aluminium alloy extruded profiles
Ladder contraction prevention device Folding prevention device	JIS G 3104 Steel bars for rivets JIS G 3201 Carbon steel forgings for general use JIS G 5705 Malleable iron castings
Hook	JIS G 3101 Rolled steel for general structure
Pulley	JIS G 5101 Carbon steel castings JIS H 5120 Copper and copper alloy castings
Bolts	JIS G 3123 Cold finished carbon and alloy steel bars
Pins	JIS G 3104 Steel bars for rivets JIS H 4040 Aluminium and aluminium alloy bars and wires

(ii) Materials used in hanging ladder

Part name	Material
Vertical bar Projections	JIS F 3303 Flash butt welded anchor chain JIS G 3101 Rolled steel for general structure JIS G 3535 Wire ropes for aircraft control JIS H 4000 Aluminium and aluminium alloy sheets, strips and plates
Rungs	JIS G 3101 Rolled steel for general structure JIS G 3123 Cold finished carbon and alloy steel bars JIS G 3141 Cold-reduced carbon steel sheet and strip JIS G 3444 Carbon steel tubes for general structure JIS H 4000 Aluminium and aluminium alloy sheets, strips and plates
Hanging metal fittings	JIS G 3101 Rolled steels for general structure
Bolts	JIS G 3123 Cold finished carbon and alloy steel bars
Pins	JIS G 3104 Steel bars for rivets JIS H 4040 Aluminium and aluminium alloy bars and wires

Strength test

Article 8 The vertical bar and rungs of the evacuation ladder shall not have permanent strain in the direction of the vertical bar in the tests where static load is imposed, as in the chart below.

Part name	Static load
Vertical bar	For the part covering from the uppermost rung to the lowest rung, for each 2 meters or its fraction, compressive load of 500 newtons for one vertical bar (for the ladder that uses wire rope or chain for the vertical bar, 750 newtons; for the ladder that has more than three vertical bars, one of the inner vertical bars in the inner part, and for the ladder with a single vertical bar, for that vertical bar, 1,000 newtons each), and for the fixed ladder with foldable lower structure or expandable and contractible lower structure, as well as the hanging ladder, tensile load.
Rung	For each rung, 1,000 newtons of uniformly distributed load on the central 7-centimeter part

- (2) The vertical bar and the rung of the evacuation ladder shall not have cracks and breaking, among other damages, in the test to impose static load which is twice as stipulated in the chart in the previous paragraph toward the direction of the vertical bar.
- (3) Of fixed ladders, the stow-away type shall not have permanent strain, cracks and breaking, among other damages, in the test to impose static load of 220 newtons toward the right-angle directions of the vertical bar and the rung under the condition where the vertical bar is fixed, and rungs are horizontally pulled out, on the upper end, the central part, and the lowest end of the vertical bar.
- (4) The propped up ladder shall not have permanent strain, cracks and breaking, among other damages, in the test to impose static load of 650 newtons in the vertical direction each on the locations in a 2-meter interval on the left, the center, and the right, while the ladder is placed horizontally, with both of its ends supported by appropriate stands.
- (5) The hanging ladder for hatch shall meet the requirements in each of the following tests:
 - (i) The vertical bar and the rung of the hanging ladder for hatch shall not have permanent strain in the direction of the vertical bar in the test to impose static load as stipulated in paragraph 1, with the test equipment as shown in the figure.
 - (ii) The vertical bar and the rung of the hanging ladder for hatch shall not have cracks and breaking, among other damages, in the test to impose twice the static load as stipulated in the previous item.
- (6) The attachment locations of the vertical bar and the rung shall not have permanent strain, cracks and breaking, among other damages, in the tests as stipulated in each of the previous items.

Repeat test, etc.

Article 9 The evacuation ladder shall not have significant deformation, cracks, or breaking in the test to repeat 100 times of deployment and stowing.

- (2) The metal fittings for the hanging ladder, for each one, shall not have significant deformation, cracks, or breaking when for each 2 meters or its fraction, tensile load of 1,500 newtons is

imposed toward the direction of the vertical bar for the part from the uppermost rung to the lowest rung.

- (3) The projections in the hanging ladder attached to a single horizontal ladder, shall not have significant deformation, cracks, or breaking in the test to compressive load of 150 newtons toward the right-angle directions of the vertical bar and the rung.
- (4) The rung of the evacuation ladder shall not spin or have significant deformation, cracks, or breaking in the test to use 23 newton meters of torque.
- (5) The horizontal distance from the upper rung attachment part to the lower rung attachment part in the hanging ladder for hatch shall be less than 0.4 meters in the test to impose a static load of 1,000 newtons from the load imposition location, when using the test equipment in the figure.

Corrosion test

Article 10 The evacuation ladder shall not have corrossions that could fail the ladder in its function or structure, after sprayed with salt water for 8 hours with the test method as stipulated in JIS Z 2371 (salt water spray test method), to be left unattended for 16 hours, for a single cycle, to be repeated for 5 times, washed with cold water, and then natural dried for 24 hours.

Display

Article 11 The evacuation ladder shall have a display of items in each of the following items at an easily seen place in the way the display items do not easily become erased.

- (i) Model
- (ii) Type
- (iii) Name of the manufacturer or trade mark
- (iv) Manufacturing date
- (v) Serial number
- (vi) Length
- (vii) Deadweight for propped up ladder or hanging ladder
- (viii) Model number
- (ix) Characters that state “for the hatch” for the hanging ladder for hatch

Exceptions to the standards

Article 12 With regards to evacuation ladders that are developed with new technology, in the case the Minister of Internal Affairs and Communications decides that the said evacuation ladders meet the requirements in this ministerial order, based on the form, the structure, the materials, and the performance, the said evacuation ladders shall be deemed to have met the technical standards set forth by the Minister of Internal Affairs and Communications, regardless of the stipulations in this ministerial order.

Supplementary Provision

This ministerial order shall come into effect as of June 1, 1965.

Supplementary Provisions

Ordinance of the Ministry of Home Affairs No. 11, dated July 28, 1975

- (1) This ministerial order shall come into effect on the day of promulgation.
- (2) Test for the metal evacuation ladder for which the application for the firefighting machines and equipment test, implemented by Japan Fire Equipment Inspection Corporation or an entity, was actually submitted at the time of enforcement of this ministerial order shall follow the stipulations in the previous regulations.
- (3) The model certification for the metal evacuation ladder that was actually received at the time of enforcement of this ministerial order and the model certification for the metal evacuation ladder that was received as the result of passing the test in accordance with the stipulations in the previous regulations, in compliance with the stipulations in the previous paragraph shall remain effective only until March 31, 1977.

Supplementary Provisions

Ordinance of the Ministry of Home Affairs No. 7, dated March 18, 1987

This ministerial order shall come into effect on the day of promulgation.

Supplementary Provisions

Ordinance of the Ministry of Home Affairs No. 27, dated April 24, 1997

Effective date

This ministerial order shall take effect on May 1, 1997. However, the stipulations in the revisions in Paragraph 1 and 3, Article 8, as well as Paragraph 2, Paragraph 3, and Paragraph 4, Article 9 shall be effective on October 1, 1999.

Transitional measure

- (2) Test for the metal evacuation ladder for which the application for the covered machines and equipment test, implemented by Japan Fire Equipment Inspection Corporation, was actually submitted as of May 1, 1997, shall follow the stipulations in the previous regulations without regards to the stipulations in Item 2, Article 2, Article 3, Article 4, and Item 3, Article 5, and Item 4, Article 5, of the post-revision ministerial order to provide technical standards for metal evacuation ladder (hereinafter referred to as “the new ministerial order”).
- (3) The model certification for the metal evacuation ladder that was actually received as of May 1, 1997, and the model certification for the metal evacuation ladder that was received as the result of passing the test in accordance with the stipulations in the previous regulations, in compliance with the stipulations in the previous paragraph, shall be deemed to have received the model certification in the new ministerial order.
- (4) Test for the metal evacuation ladder for which the application for the covered machines and equipment test, implemented by Japan Fire Equipment Inspection Corporation, was actually submitted as of October 1, 1999, shall follow the stipulations in the previous regulations without regards to the stipulations in Item 1, Article 8, Item 3, Article 8, Item 2, Article 9, Item 3, Article 9, and Item 4, Article 9, of the new ministerial order.
- (5) The model certification for the metal evacuation ladder that was actually received as of October 1, 1999, and the model certification for the metal evacuation ladder that was received

as the result of passing the test in accordance with the stipulations in the previous regulations, in compliance with the stipulations in the previous paragraph, shall be deemed to have received the model certification in the new ministerial order.

Supplementary Provision

Ordinance of the Ministry of Home Affairs No. 44, dated September 14, 2000

This ministerial order shall take effect on the effective date (January 6, 2001) for the Law to partially revise the Cabinet Act (Law No. 88 of 1999).

Supplementary Provision

Ordinance of the Ministry of Home Affairs No. 26, dated March 9, 2006

- (1) This ministerial order shall come into effect as of October 1, 2006.
- (2) Test for the metal evacuation ladder for which the application for the covered machines and equipment test, implemented by Japan Fire Equipment Inspection Corporation, was actually submitted at the time of enforcement of this ministerial order, shall follow the stipulations in the previous regulations.
- (3) The model certification for the metal evacuation ladder that was actually received at the time of enforcement of this ministerial order, and the model certification for the metal evacuation ladder that was received as the result of passing the test in accordance with the stipulations in the previous regulations, in compliance with the stipulations in the previous paragraph, shall be deemed to have received the model certification in the ministerial order that provides the post-revision technical standards for metal evacuation ladder.

Test equipment (concerning Article 8 and Article 9)

Unit: meter

